SHADOWMOOR WEAPON CONSTRUCTION GUIDES

Contents

Weapons and Equipment

Allowed Weapon Physreps

The following types of weapon physreps are legal for use at Shadowmoor. Please read this list carefully, as Shadowmoor's combat style is specialized high speed light-touch which does not safely support the use of mass-produced latex, EVA, or other "foam combat" weapons. If you can buy it online from a name-brand store or website, it is not a valid weapon for Shadowmoor. **Remember, all in play items that are beyond the mundane should also be always tagged or written on as to their magic item number.**

Construction Methods

Boffers

Shadowmoor permits use of "boffers" (weapons constructed of a 3/4" Schedule 40 or 1/2" Schedule 80 PVC core, 5/8" pipe foam padding, and tape), constructed in accordance with this Weapon Construction Guide. Any player can construct a boffer weapon for the game and is not required to be an approved weapon maker as with an EVA weapon.

These weapons are relatively low-cost to construct but require some special materials which are not commonly available at local hardware stores.

EVA Weapons

- Shadowmoor permits use of EVA weapons constructed as per this Weapon Construction Guide.
- Shadowmoor only permits use of these weapons if they are made by a certified and approved Shadowmoor weapon maker.
- EVA weapons purchased from a mass-market vendor are not permitted for Shadowmoor use with the exception of Calimacil as detailed in Calimacil Expanded Playtest documentation in the Shadowmoor Rulebook.

These weapons are typically more expensive but are also lighter and can be constructed with more detailed designs compared to boffers.

All EVA weapon makers seeking approval must go through the process of submitting a fully constructed weapon for heavy safety testing by Game Management, including complete destruction to inspect the weapon core and components. This is a process which is not conducted on-site, and therefore requires at least two events to complete.

Weapon Types

Melee Weapons

Many different types of weapons can be made to simulate medieval weapons, and Shadowmoor encourages players to experiment, provided the weapons adhere to the basic safety rules. A player should not be put-off by an experiment that did not pass inspection.

All melee weapons must be one solid conjoined piece and cannot be attached by anything simulating chain or other flexible attachments. For safety reasons we cannot use weapons that simulate articulated weapons such as fails, chains, etc.

All thrusting tips must have two (2) to three (3) inches of open-cell foam padding. Any less and someone might get stabbed by the PVC; any more, and it is likely to break off during combat.

Any portion of a weapon that may come in contact with another player must be padded with pipe foam. This includes the blade area of a weapon (e.g., Sword, Dagger, etc.), as well as a good portion of the shaft of a Polearm or Spear.

The handle of any one-handed weapon may not be longer than ten (10) inches while the handle of any two-handed weapon may not be longer than fourteen (14) inches. The unpadded handle length of Spears, Staves, and Polearms max not exceed one-third (1/3) the overall length of the weapon. The non-padded handle length of Spears, Staves, and Polearms must be in the middle section.

All weapons must be fairly rigid so they do not whip when swung quickly. This is especially important with Polearms. When making Polearms, thicker PVC pipe should be used. The thickness of the PVC is denoted by the amount of pressure it can hold (PSI) or by the "Schedule" of PVC. The higher the number, either PSI or Schedule, the thicker the PVC. All foam on a weapon must have some give when it makes contact. If not, the weapon will hit too hard. Some common mistakes that lead to this are:

- Using foam with a smaller diameter than the pipe. If the foam diameter is too small, it can be split and a smaller piece of foam can be padded to make it fit.
- Taping the foam too tightly or spiral taping the foam. All weapons should be taped lengthwise. This decreases the chance of compacting the foam and uses the least amount of tape.

All pipe foam should slide easily over the pipe, yet fit snuggly enough to keep the weapon from rattling if shaken.

In combat, it is possible for any part of the weapon, including the pommel and cross guard, to strike an opponent; thus, all ends and tips must be padded and taped. It is permissible to use electrical tape on the areas that will not normally contact someone.

Polearms, Spears, and Staves may be reinforced by placing a 1/2" piece of PVC inside the 3/4" core to prevent whipping. Up to one-third (1/3) of the overall length of the weapon may be the unpadded handle while the remaining two-thirds (2/3) of the weapon must be padded. The padded portion of the weapon should be proportionally divided between the top and the bottom; that is, approximately one-third (1/3) of the foam should be on the top of the weapon while the other is at the butt of the weapon.

For Polearms, finally, an 18 – 24 inch open-cell foam blade is attached to the top end of the weapon. As the butt end of the weapon is never to be used to attack, half a tennis ball covered in matching colored tape may be used instead of an open-cell thrusting tip to ensure the longevity of the weapon. A player who is hit with any part of the weapon other than the 18 – 24 inch head takes no damage. Two hands must be used at all times with a Polearm. Furthermore, only the blade of a Polearm is required to be of metal. For formal magic

purposes, however, if only the blade is made of metal, then the Polearm will only count for formal capacity as if it were a Dagger. If the entirety of the weapon is made of the same metal, then the formal space is considered to be that of a Two-Handed weapon.

For Spears, finally, an 8 (eight) inch open-cell foam blade is attached to the top end of the weapon. As the butt end of the weapon is never to be used to attack, half a tennis ball covered in matching colored tape may be used instead of an open-cell thrusting tip to ensure the longevity of the weapon. A player who is hit with any part of the weapon other than the 8 (eight) inch head takes no damage. A Spear is a thrusting and slashing weapon and may not be thrown, two hands must be used to attack with a spear while only one is necessary to parry. Furthermore, only the blade of a Spear is required to be of metal. For formal magic purposes, however, if only the blade is made of metal, then the Spear will only count for formal capacity as if it were a Dagger. If the entirety of the weapon is made of the same metal, then the formal space is the same as a Two-Handed weapon.

For Staves, there must also be a padded thrusting tip at each end. Staves must be wielded to attack and parry with both hands in the middle, unpadded section. Staves can be used as a blocking weapon with the use of one hand only, but, as mentioned above, any attack done with a Staff must be done with both hands. Sweeping swings are not allowed.

Two-Handed Swords and Two-Handed Blunt weapons must be wielded with both hands at all times, even while blocking.

Bows, Crossbows and Arrows

Traditional Bows, Crossbows and Arrows

Bows and crossbows may not have more than a fifteen (15) pound pull. All striking edges must be completely layered in a minimum of 1/2 inch closed cell foam and the tips must have a 2 inch open cell foam thrusting tip in case of accidental striking of other players. Mini-Crossbows and Hand Crossbows are not as powerful as their larger kin and therefore deal less damage in combat, any crossbow that does not require two hands to wield is listed in this category.

Arrows and bolts must be made entirely of foam or must be LARP arrows with flat foam tips and fiberglass shafts approved by Weapon Safety with the receipt of the approved vendor. Approved vendors include:

- Dark Knight Armoury
- Medieval Archery
- Medieval Collectibles

Packet Bows

When constructing a bow, it must be curved in shape. The bow must be completely layered in closed cell foam with a minimum 1/2 inch wall thickness and have a 2-inch open cell foam thrusting tip in case of accidental striking of other players. The length in height (not length from tip to tip along the bow stave) can range between 43 inches and 72 inches. No string may be attached but a loose sling for carrying is permitted. The core may be of 3/4 inch PVC schedule 40 or ½ inch PVC schedule 80.

Packet Crossbows

A crossbow must be constructed in a "T" shape. The crossbow must be completely layered in closed cell foam with a minimum 1/2 inch wall thickness and the ends of the crossbow must have a 2 inch open cell foam thrusting tip in case of accidental striking of other players. The stock (tiller) length of a crossbow can range between 14 inches and 32 inches and cross (limb assembly) of the "T" cannot be smaller than half the length of the stock and cannot exceed the length of the stock. The core of the stock (tiller) may be made of 3/4 inch PVC schedule 40 or ½ inch PVC schedule 80 but the cross (limb assembly) should be completely made of open or closed cell foam. No string may be attached but a loose sling for carrying is permitted.

Shields

The longest dimension of a shield may not exceed the distance from the wielder's armpit to fingertip. Shields may be made of almost any material. This includes foam, aluminum, plastic, wood, etc. The perimeter of any shield that is not all foam must be covered with a minimum of 5/8 inch wall thickness closed cell pipe foam. Any bolts used in the shield must have the flat side on the front of the shield and the nut on the back. The grip of a shield may not be located in the center.

Spell Packets

Spell Packets are small (~2" wide) rounded packets of cloth and birdseed, tied off with rubber bands, which are used to represent spells and poisons. The birdseed used should include few to no sunflower seeds. The construction of these packets is covered in the Instagram tutorial found at https://www.instagram.com/p/BGK18SnQY6A.

Waylay Widgets, Boulders, and Throwing Weapons

Waylay Widgets are 8-12 inches long weapons constructed entirely of foam and tape.

Thrown Weapons must be made completely out of pipe foam and open cell foam. Thrown Weapons may be of any shape and size, but the longest dimension cannot exceed eighteen (18) inches; the minimum length is eight (8) inches.

Thrown rocks must have at least a four (4) inch diameter. Especially small thrown weapons may be made out of closed cell foam but must be approved for use.

Javelins are made of three (3) feet of pipe foam and no pipe. Weights may be placed in the end. A thrusting tip is required.

Purchasing Shadowmoor-Legal Weapons

There are many Shadowmoor community members who are willing and able to provide both of the above types of boffer/EVA weapons for purchase are listed on the Shadowmoor website.

Borrowing Weapons for New Players

Note that new Players may borrow standard boffer weapons from the game, for free, through their third event. After their third event they may no longer borrow weapons and must instead provide their own weapons for use at the game. More information on this process is available in the Shadowmoor New Player Guide.

Weapon Safety

All weapons must be safety checked at each event and passed for safe play by weapon safety marshals. Weapons degrade over time and, if they no longer meet the minimum safety standard, must be replaced or repaired before they will be legal for use in combat at any event.

When checking in for the event bring all of your weapons to the check in table to be checked for safety. You will be given a safety tag for those that pass, and this tag will need to stay on your person or go with the weapon it's assigned to if the weapon is given to another player for the entire event. Weapons that have In Play value and/or have been assigned an Item number by the game MUST have this number legibly and visibly displayed on the weapon. (a good area for this is the bottom of the blade, or on the crossguard).

Weapon Construction

As stated elsewhere, safety is the foremost concern of Shadowmoor therefore weapons must be constructed to the exact specifications presented below. Keep in mind that even if a weapon is properly constructed, the possibility still exists of causing injury if the weapon is not used correctly.

Weapon Dimensions

The chart below lists all the pertinent dimensions for each weapon in inches. The blade length of a weapon is measured from the top of the crosspiece to the end of the crush tip. Players should remember to keep the length of the crush tip in mind when cutting the PVC for a weapon.

		Blade Length		Overall Length		Damage
Weapon	Max Handle Length	Min	Max	Min	Max	
Waylay Widget	-	-	-	6”	12”	-
Dagger/Small Weapon	7”	8”	17”	12”	24”	1
Thrown Weapon	-	8”	18”	-	-	1
One-Handed Shortsword/Claw	10”	18”	24”	26”	32”	2
One-Handed Longsword	10”	25”	36”	34”	44”	2
One-Handed Hammer, Mace	10”	18”	26”	26”	44”	2
One-Handed Axe	10”	12”	18”	26”	44”	2
Staff	1/3 Overall Length	-	-	60”	72”	2
Javelin	-	-	-	36”	36”	2
Spear	1/3 Overall Length	8”	8”	48”	66”	2
Polearm	1/3 Overall Length	18”	24”	60”	72”	4
Two-Handed Sword/Blunt	15”	38”	48”	48”	62”	5
Traditional Shortbow	-	-	-	24”	42”	2
Traditional Longbow	-	-	-	43”	84”	6
Traditional Crossbow*	-	-	-	-	-	6
Traditional Hand/Mini Crossbow*	-	-	-	-	-	2
Packet Crossbow*	-	-	-	14”	32”	3
Packet Bow*	-	-	-	43”	72”	3

***See text for additional dimensions.**

Special Material Coloring and Decoration

Weapons may be decorated in several ways, but there are certain colorings that denote special kinds of weapons made from specific materials. All weapons must conform to the following color restrictions.

Material	Color		Material	Color
Adamantite	Black		Meteoric Iron	Black with white flecks
Arushan Steel	Gray		Mithril	White
Bone	Ivory with brown Cracks		Obsidian	Black with silver lines to show sharp facets
Chromium	Chrome (gray or silver with iridescent/shiny portions)		Otrok	Brown with green vines, as per living plant
Cold Iron	Gray with black flecks		Poison/Acid	Green with dripping patterns

Coral	Vibrant pink, blue, and green in coral patterns		Primal Crystal	Green with white lines to show sharp facets
Crystal	Gray with white lines to show sharp facets		Silver	Metallic silver
Driftwood	Dense/twisted wood grain stripes in brown and gray		Star Metal	Gray with black lines and white speckles
Fire	Red, orange, and yellow in flame pattern		Steel/Iron	Gray
Fulgurite	Yellow with white highlights		Stone	Gray with fluid or patching stone patterning
Gemstone	As per gemstone color with lines to show sharp facets		Volcanic Bronze	Rust red with metallic copper highlights
Gold	Metallic gold		Water/Ice	Blue with white drops, waves, or snowflakes
Jet	Completely black stone with facets (jewelry ONLY)		Wood	Brown with (optional) woodgrain
Lightning	White or light blue with sharp yellow lightning branches			

Note that unless obtained in-game, a Character cannot construct a weapon of any type of material other than bone, steel/iron, wood, [bronze, copper, or stone – requires physrep approval]. Weapons of other material types must be accompanied by the appropriate tag or card for the physrep.

Boffer Weapon Construction

Materials List

- 3/4” PVC pipe (400 PSI/schedule 40 must be used for weapons over 44”) or 1/2" PVC pipe for weapons 24” and under
    - Alternatively, 3/4” PVC pipe (400 PSI/Schedule 40) may be replaced with ½” PVC (Schedule 80)
- 5/8” thick pipe foam (the wall of the foam MUST be 5/8” thick)
- Open cell foam
- Small squares of Mat or EVA foam
- Duct or Gaff tape
- PVC pipe-cutter or hacksaw
- Knife, razor blade, or scissors to cut foam
- Electrical tape for the cross piece and grip
- Heat gun
- Respirator and heat-resistant gloves

All of these materials can be purchased at most hardware stores. The most difficult to find might be the pipe foam. Due to the climate in the southeast, most places only carry pipe foam with a 3/8” thick wall, and thus it must be specially ordered from a supplier. If you have trouble finding the correct foam contact the game owners to see if they have materials available for purchase.

Guidance on some specific sources and product numbers for these items can be found at:

https://drive.google.com/drive/u/2/folders/1FQo-44CH5H7mvW1YhvFrepQi_Wq61vlY

Basic Instructions

Measure and cut PVC

1. Measure and cut your PVC pipe about 4” shorter than the desired length for your weapon. This will give you room for your 2” open cell foam tip and an inch on each end to extend the pipe foam beyond the PVC so that you will not feel the core at the tip and pommel of the weapon.
2. Make sure that you don't leave a jagged or sharp edge when cutting the PVC pipe. This can cause the pipe to cut through the foam and tape and destroy your weapon or hurt someone. If your cut leaves a jagged edge, simply file down the pipe until it is smooth.

Optional: Heat and Bend

1. If you are making a curved weapon, like a set of claws, you will need to make a bend in the PVC pipe. Mark where you want the bend in your pipe, and make sure if you are making a pair that they are marked evenly. Use a respirator at this step and in a well-ventilated area as the fumes can be toxic/ harmful, DON’T DO THIS STEP INSIDE!
2. Turn on your heat gun to the lowest setting (you can always turn it up if it's not hot enough), hold it about 12 inches away from the pipe and heat the area you want to bend. Wave the heat gun

back and forth over the pipe slowly, while turning it (WATCH YOUR FINGERS!), making sure to heat all sides around the desired bend area as well as an inch or two up and down. This will help make sure you have a gradual bend and not a sharp crease that will rupture the pipe or end up cutting the pipe foam.

3. Once you feel the pipe starting to bend, use both hands to GENTLY bend the pipe to your desired shape. If the pipe is resisting, stop, and continue to heat. The pipe should have a natural curve without any large crimps or sharp edges.
    - If the pipe starts to turn brown, reduce the heat of your heat gun or move it further away from the pipe.
    - If the pipe is bubbling, get a new piece of pipe and start over. This reaction means the pipe has become brittle/unstable and has a weak point.
4. Hold the pipe in the position you want until it has cooled and will hold the desired shape. This should only take about 2-5 mins. Wait until it has cooled completely to continue constructing the boffer.

Tape the PVC closed

1. Using electrical tape, lay two strips of tape in an X shape over both open ends of your pipe. You can add a strip around them for extra stability if needed. This will keep the foam used later from falling into the pipe.

Cut and shape foam

1. Measure and cut your pipe foam tube to the length desired for your weapon, taking into account that you will need about an inch extended over both edges of the PVC.
2. Take your open cell foam and shape the head of your weapon. The open cell piece should be at least 2 inches minimum, and no more than three inches maximum in height and be shaped to the blade. (Keep the cutoff scraps of open cell foam for later steps!)
3. Optional: cut and shape any open cell foam decorative pieces or add-ons for your boffer like axe heads, blade enhancements or halberd blades. Remember to follow the safety and dimension requirements.
4. Measure and cut your crossguard. As the crossguard is not a striking surface. It can be made out of denser foam such as closed cell foam, EVA or matt foam. It still has to have a reasonable amount of give and exclude any sharp points that could end up in an eye socket. Make sure to cut a hole or slit in the side of your crossguard so it can slip onto the pipe.
5. Measure and cut the pipe foam for your pommel. Remember that the pommel like the blade will need to extend over the PVC by an inch to make sure you can't feel the core. The pommel like the crossguard (and the rest of the weapon) needs to be large enough that it will not fit inside of an eye socket.

Construct and Tape

1. Now that you have all of your pieces cut and shaped, it's time for assembly! Gently slide the pipe foam tube for the blade onto the PVC pipe. Go slowly so you don't rip the foam. The tube should

be secure on the pipe, with no wiggle room or gap space. Leave one inch of tape protruding over the blade edge of the PVC pipe.

2. Fill the hole in the center of your pipe foam at the tip with the scraps of open cell foam saved from earlier. You can cut a small piece of mat foam or EVA foam to use underneath flush with the PVC pipe to help keep it from pushing upwards.
3. Place your open cell foam tip on the end of your weapon. Using your gaffer or duct tape, tape the tip to the blade foam.
    - A useful tip here is to tear your tape into thinner strips to cover smaller sections more effectively.
    - Make sure not to over-tape the end. This can cause it to be too hard and become unsafe.
    - Try not to pull the tape down over the foam too hard. You don't want to compress the foam too much. Make sure that you are maintaining at least 2 inches of an open cell tip!
4. Now that the tip is on, use long strips of tape to tape the rest of the blade. Make sure you extend the tape all the way to the PVC pipe past the blade by at least two to three inches to make sure the foam is securely attached to the PVC pipe.
5. Optional: Attach and tape any add-on pieces. Make sure that you are not over-taping them, so they become hard, and that they are securely attached and will not rip off during combat.
6. Tape your crossguard and slide it onto the boffer, secure it to the PVC pipe so it will not move or slide on the handle.
7. Flipping your weapon over, place your pommel on the back end of your weapon, keeping at least one inch protruding over the PVC pipe end. Same as the blade, use a small piece of EVA or ma t foam to keep the pipe from poking through, then stuff the remainder of the hole with open cell foam. Using thin strips of gaffer or duct tape, cover the pommel, working your way around until no foam is showing and the entire pommel is covered, affixing it to the PVC pipe securely. Adding an extra strip of tape around the pommel of the base of the pommel can help keep it together longer.
8. Optional: If you are making a spear or polearm, half of a tennis ball may be used on the non-striking end of the weapon instead of a pommel. Electrical tape is recommended to cover this and affix it to the PVC as it’s slightly more durable when coming in repeated contact with the ground.
9. Using electrical tape, tape the PVC pipe handle of the weapon. Make sure all the PVC is covered. You can go over where you taped the blade and pommel to the core to secure them.

Heating, Painting and Sealing

1. If you are using Gaffers tape, you'll want to heat-seal your weapon. LIGHTLY heating the gaff tape causes the glue to activate and seal the edges. You don't want to overheat and cause it to burn or bubble and ruin your boffer. You can heat seal it by using a heat gun on the LOWEST setting and running it over the weapon from about 12 inches away for a couple of seconds per area, then firmly pressing or rubbing that area to seal the edges (make sure to wear gloves and be careful so you don't burn your hands). You can alternatively rub your hands vigorously along the blade to heat seal the edges with friction heat as well.
2. For painting spray paint and craft store acrylic paint are great options! You’ll just need to be sure to seal them once they are dry. Choose a clear coat spray to seal the design. Be sure to finish any painting and sealing at least 48 hours before the game to make sure that there is no residue or color transfer to other people or weapons.

Boffer Weapon Safety Requirements

Many different types of weapons can be made to simulate medieval weapons, and Shadowmoor encourages players to experiment, provided the weapons adhere to the basic safety rules. A player should not be put off by an experiment that did not pass inspection.

All crush tips must have two (2) to three (3) inches of open-cell foam padding. Any less and someone might get stabbed by the PVC; anymore, and it is likely to break off during combat.

Any portion of a weapon that may come in contact with another player must be padded with pipe foam. This includes the blade area of a weapon (e.g., Sword, Dagger, etc.), as well as a good portion of the shaft of a Polearm or Spear. The pipe foam should slightly extend beyond the end of the PVC so that the core is not able to be felt at the tip of the weapon, or at the end of the pommel.

Any add-ons to the pipe foam blade (e.g. axe and polearm heads, extra padding, blade edge embellishments etc.) must be made of only open-cell foam.

The handle of any one-handed weapon may not be longer than ten (10) inches while the handle of any two-handed weapon may not be longer than fourteen (14) inches.

The non-padded handle length of Spears, Staves, and Polearms max not exceed one-third (1/3) the overall length of the weapon. The non-padded 1/3 handle length of the weapon must be in the middle.

All weapons must be fairly rigid, so they do not whip when swung quickly. This is especially important with Polearms.

When making Polearms, thicker PVC pipe should be used. The thickness of the PVC is denoted by the amount of pressure it can hold (PSI) or by the “Schedule” of PVC. The higher the number, either PSI or Schedule, the thicker the PVC.

All foam on a weapon must have some give when it makes contact. If not, the weapon will hit too hard. Some common mistakes that lead to this are:

- Using foam with a smaller diameter than the pipe. If the foam diameter is too small, it can be split and a smaller piece of foam can be padded to make it fit.
- Taping the foam too tightly or spiral taping the foam. All weapons should be taped lengthwise. This decreases the chance of compacting the foam and uses the least amount of tape.

All pipe foam should slide easily over the pipe, yet fit snuggly enough to keep the weapon from rattling if shaken.

In combat, it is possible for any part of the weapon, including the pommel and cross guard, to strike an opponent; thus, all ends and tips must be padded and taped and larger than the size of an eye socket.

Boffer weapons can be carried in several ways, including weapon frogs, sheaths and scabbards, but they cannot be tied or affixed to the body (e.g., lanyards, string or rope). This can pose safety hazards to both the player wielding the weapon and other players around them. Likewise, all parts and pieces of the weapon must be firmly attached and immobile, meaning the foam blade, crossguard, pommel, axe heads and decorative pieces must be firmly secured.

Weapons cannot be designed or have any parts that could trap or ensnare another person or their weapon, so take care when designing axe heads and other attachments that they are not overly long/ curved or that they attach back at the base of the weapon.

EVA Weapon Construction

Materials

- 3/8” Fiberglass core (1 handed Weapons)
- .505” Fiberglass core (Staffs and Spears)
- .745” Fiberglass core (2 handed swords and Polearms)
- 2# Density EVA Foam sheet
- Electrical Tape
- Gaff Tape
- DAP Weldwood
- Dremel with cutoff wheel (unless your fiberglass is 100% pre-cut to length)
- Utility blades
- Belt sander
- Brushes
- Goggles
- Respirator with organic vapor filter (DO NOT breathe the DAP and PD fumes)
- Metallic Sharpies
- Rulers and straight edges

Basic Instructions

Cut and Cap Fiberglass Rod

1. Cut fiberglass rod to a length 4" shorter than your total desired length.
2. Cap off one end by encasing it in hot glue or using an end cap piece. Make sure the end is not jagged or it will chew through the foam with repeated pressure.

Cut Foam Pieces

1. From your foam sheet, assuming it is 3/8’ thick, cut three pieces at the length you want the blade to be. Each piece should be at minimum 2" wide.
2. On one of the three pieces, use your utility blade to cut a channel up the middle about 3/8" wide (the width of your fiberglass) that starts at one end of the piece and stops 3" short of the other end. This channel will go all the way through your foam, leaving you with an elongated “n” shape if the tip of the weapon is facing away from you. It will be where your fiberglass rod sits and is glued, so it should be the right width to seat the rod snugly. It should position your fiberglass to sit exactly at the center of the weapon body.

From Chris Hayes, on his technique for this step:

“I measure out a line up the center, then take my yardstick and draw two more vertical lines, each roughly 1.5/8" off the center. Then I take a fresh razor blade and cut out the channel. It doesn't have to be exactly perfect as long as there's not too much variation and the width is correct. If it's really widely tapering or getting wider or has big gaps in it, it won't be usable, but you don't need machine precision.”

(Editor’s note: a FRESH, SHARP blade is critical here. Dull blades result in torn foam and uneven contact for glue.)

Glue the Core

1. PUT ON YOUR ORGANIC RESPIRATOR and go somewhere with good ventilation. Do not do this in your kitchen or apartment. Go outside!
2. Using DAP Weldwood and a disposable brush, spread a thin layer over the fiberglass rod, covering the entire area that will be inside the blade. Then do the same thing on the foam, covering the inside edges and top edge of the channel you cut in the foam strip. You don't want to use too much – enough to get full coverage but not so much that it is really goopy. Wait about 2 minutes so that the glue is dry but still slightly tacky,
3. Seat the fiberglass rod. You basically get ONE SHOT at this and this is one of the easiest parts to go wrong, so be careful! Once the glue is tacky, take the rod and insert it in the channel so the foam is stuck to both sides.
    a. You want it to be as straight and even as possible - this is where your core becomes centered in your weapon.
    b. You want it to be entirely adhered to the rod with no gaps on any sides, including the tip.
    c. The rod goes up the channel, with the tip of the rod that is end capped or hot glued touching the top edge of the channel.

Now you've got the centerpiece of the blade. You don't want any chance whatsoever of it separating. And once the DAP sets, the only way to get it off the core is to physically shred the foam - this is basically impossible after the next few steps.

Reinforce the Core Tip

1. Once you've got the core together, lay it flat on one side.
2. Spread a thin layer of DAP over the spot where the end of the rod meets the top of the channel. When it is dry enough to stick, take a small piece of gaff tape and cover over the seam between the rod and the foam at the top of the channel.
3. Take another one of your three foam strips and lay it flat as well. Spread DAP over both the face-up side of the strip and the face-up side of the core, and when it's properly cured, stick the two glued faces together.
4. Once that's done, flip the core over and repeat the same steps with the gaff tape and glue the third piece of foam on the other side of the core. The edges won't all be perfectly lined up, but it is important to take care to get them as close as you can and to make the sheets as consistent and straight as possible.

Remove Air Bubbles

Immediately after gluing you need to remove the air bubbles by flattening out the blade. You can do this by stepping on it, but a rolling pin works well for consistent pressure along the entire blade.

Place it so the non-striking surface is on the flat surface and press it out with your hands, feet, rolling pin, or whatever. Just be thorough. Air bubbles mean safety issues with separation later!

Now you essentially have the fiberglass core sandwiched between three sheets of foam, via a channel up the middle sheet. If you did the DAP right, it's 100% impossible to get the rod out without destroying the blade, and the tensile strength of three layers of foam all essentially fused together makes that impossible without incredible strength or a razor blade.

If you are able to pull your weapon layers apart easily at this stage, something has gone wrong and your glue has failed to cure properly - your weapon is not safe, and you will want to cut out/clean the core and start over with fresh foam.

Shape the Weapon

From here, the process requires specific external equipment, primarily a belt sander. This step is VERY DIFFICULT to do evenly by hand!

1. PUT ON YOUR GOGGLES. Keep your respirator on. It's all fun and games until you get foam dust in your eye or lung.
2. Place the striking edge of the blade on the belt sander carefully, grinding it down so it's flat and even.
3. Shape the blade. You must maintain at minimum 5/8" thickness on the striking surface but can go as low as 1/4" or 1/2" on non-striking sides. You may want to make some depth marks on your blade to indicate your desired "stopping point" before you begin sanding freehand.
4. Bevel the edge to the desired shape. This should NOT come to a sharp point but be somewhat rounded or wide so that it doesn't become a hard/narrow point of impact once the weapon is sealed and stiff.
5. Curve tip of the blade so it isn't too pointy. You'll put your eye out!

Add Details, Crossguards, and Pommels

1. Add any detail work to the blade with a Dremel or wood burner. Make sure not to cut or carve too deep into the foam.
2. Carve and attach the crossguard. Using DAP, ensure it is glued onto the core well and to the blade above, using similar methods to how you inserted the fiberglass core to ensure even adhesion.

While the crossguard is not a striking surface, it may come into contact with other players during combat, so not much more than 3# foam density is recommended to give it a little flexibility. Also, be mindful of your design/crossguard size to ensure it is not becoming a functional part of the 'striking surface' and can be wielded safely. No part of the weapon should be sharp or overly pointed.

Heat-Seal the Foam

Using a heat gun, heat-seal the foam to smooth it out and seal the pores. Careful not to apply too much heat as it will melt the foam and also unbind the DAP! Check your weapon carefully or any layer splitting after you've completed this step.

Practice with a piece of scrap foam if you are not experienced with this - when the foam is heated a little, you'll see the surface contract to close up its pores and become a little smoother and more shiny. This prepares it to accept the Plasti-Dip and paint.

Apply Plasti-Dip

You will want to apply exactly 8 solid coats of Plasti-Dip, leaving adequate drying time between them.

It's very easy to tell when you have a solid coat - if it's pooling and dripping, it's probably too much. If it's not covering every bit of foam, it's not enough. You will most likely use an entire can on a single blade.

Paint and Seal

From here on it is smooth sailing. Plasti-dip makes an excellent base layer for acrylic paints. Using spray paint over PD works sometimes, but some propellants can interact poorly. Any craft store acrylic paint will go on beautifully.

Seal with Kamar Varnish or clear non-yellowing acrylic, 1-2 coats. (You have many options here. Choose something durable and flexible, to avoid cracking!)

Handle and Pommel

There are various methods of constructing the handle and pommel area including drilling out wood, shaping more foam, flattening PVC and attaching it with expanding foam, etc.

Because this is not a striking surface, what you really need to be concerned about is that your handle is attached very securely and is made of something sturdy enough to survive combat. Also, keep your pommel within “eye socket minimum” size guidelines. The fiberglass at the pommel should be capped with a cap piece or hot glue and glued securely into the foam pommel with DAP.